4. On the Shells of the Albert Nyanza, Central Africa, obtained by Dr. Emin Pasha. By Edgar A. Smith.

[Received December 5, 1887.]

Among the valuable collections of Natural History recently received from Dr. Emin Pasha are a few shells which he collected in the Albert Nyanza, probably from the eastern side of the Lake.

They are referable to :—

1. *Melania tuberculata*, Müller.
2. *Melania liricincta*, n. sp.
3. *Paludina unicolor*, var.
4. *Bythinia alberti*, n. sp.
5. *Planorbis stanleyi*, n. sp.

It is not surprising that three out of these five species should be undescribed, as, with one exception, no collections of shells have ever reached this country from this particular region.

In 1866 Mr. Henry Adams gave a list, in the 'Proceedings' of this Society (p. 375), of a collection of shells made in Central Africa by Sir Samuel Baker, the discoverer of the lake. I am informed by that gentleman that all the shells mentioned by Mr. Adams, and which he has presented to the British Museum, came from the Albert Nyanza.

Through the kindness of the Rev. Horace Waller I have had the opportunity of examining a series of shells from the same locality, which he also received from Dr. Emin. Among them are examples of two new species, a *Cleopatra* and a *Bythinia*, which are not represented in the two other collections.

Altogether fifteen species are now known from this particular lake, and of these seven appear at present to be peculiar to it. The remaining eight have all been recorded from different parts of the Nile, and one species, *Melania tuberculata*, is also known from three of the other large Central African lakes, namely Nyassa, Tanganyika, and Victoria Nyanza. The *Planorbis sudanicus* also occurs in Lake Tanganyika.

The following is a complete list of the known species from the Albert Nyanza.

1. Melania tuberculata, Müller.

A large series of this remarkably distributed species has been sent by Dr. Emin Pasha. A dark purplish brown or black is the prevailing tint of most of the specimens, with only slight indications of the spotting which is characteristic of the species. Some of the examples, however, possess the usual style of colouring, being pale olive or dirty white and dotted and spotted with red.

2. Melania liricincta, n. sp.

Testa elongata, turrita, sub epidermide nigro-fusca albida ; anfractus persistentes 5, parum convexi, interdum inferne leviter tumidi,

liris spiralibus 2–3 circa partem inferiorem instructi, sutura subprofunda, obliqua sejuncti; ultimus circa medium et basim liris paucis cinctus; apertura pyriformis, intus cærulescens; peristoma tenue, marginibus callo tenui junctis. Longit. anfractuum quinque 26, diam. 9½ millim.; apertura 9½ longa, 5½ lata.

Fig. 1.

Melania liricincta.

On removing the thickish epidermis the shell has a dirty whitish appearance. The spiral ridges are usually rather strong and vary in number to some extent. Two specimens have four round the middle part of the body-whorl and four at the base, the two sets being separated by a smooth blank space. Two or three of the upper series usually revolve up the spire upon the lower portion of the upper whorls.

M. victoriæ, Dohrn, from the Victoria Falls, Zambesi River, is an allied form.

3. Ampullaria wernei.

Amp. wernei, Philippi, Conch.-Cab. ed. 2, p. 19, pl. 5. f. 4, pl. 17. f. 2; Martens, Novit. Conch. vol. iv. p. 22, pl. 114. figs. 1–5.

Lanistes, sp.?, H. Adams, Proc. Zool. Soc. 1866, p. 376.

Hab. White Nile (*Philippi*); Gazelle River (*v. Martens*); Albert Nyanza (*Baker*).

The two young shells referred to the genus *Lanistes* by Adams appear to be the early stages of this species.

4. Paludina unicolor, var.

There are in the British Museum twelve specimens from the Albert Nyanza, received from the late General Gordon and Sir Samuel Baker, which are precisely similar to those just obtained from Emin Pasha. They may be regarded as a well-marked variety of *P. unicolor*, Oliver, although differing considerably in outline from the typical form. They appear to be smaller and narrower; the whorls are more rounded and without any indication of angulation at the upper parts, and exhibit more spiral striation. The colour seems to vary considerably: some are entirely of a pale rosy tint; others are nearly white; one or two specimens belonging to Mr. Waller are of a purplish-brown colour, a few are olive-yellow, and the majority exhibit a more or less distinct pale zone at the periphery, which sometimes has a dark band below it.

5. Cleopatra emini, n. sp.

Testa ovato-acuminata, anguste umbilicata, mediocriter tenuis, sordide albida, lutea vel purpureo-fusca, interdum rufo bi- vel trizonata; anfractus 7–8, *superne decliviter tabulati, angulati, carinis duobus instructi, lineis incrementi parum obliquis, distincte striati; apertura ovalis, parva, longit. totius* $\frac{1}{2}$ *haud æquans; peristoma tenue, margine columellari leviter expanso et reflexo. Longit.* $11\frac{1}{2}$ *millim., diam.* 6; *apertura* 5 *longa,* $3\frac{1}{2}$ *lata.*

Fig. 2.

Cleopatra emini.

This pretty species is remarkable for the angulation and carination of the whorls. In five of the specimens at hand there are two keels upon the whorls, whereof the upper and rather stronger one is at the angle, the other being around the middle of the last volution and revolving up the spire just above the sutural line. In one example there is a third slight lira or keel upon the upper part of the whorl between the suture and the angle; and in another specimen the peripherial carina has become obsolete upon the body-whorl and is represented by a colour-band. *C. bulimoides*, Olivier, if keeled and angulated, would closely resemble this species. The operculum in both species is the same. It is spiral at first with a raised edge, and increases afterwards concentrically.

Three specimens of this species have been liberally presented to the Museum by the Rev. H. Waller.

6. Bythinia alberti, n. sp.

Testa parva, subglobosa, brevis, anguste umbilicata, alba, epidermide tenui lutescente induta; anfractus 4, *perconvexi, lineis incrementi striati, ultimus haud elongatus; apertura submagna, fere ovalis, longit. totius* $\frac{1}{2}$ *paulo superans; peristoma continuum, leviter incrassatum, margine columellari anguste reflexo. Longit.* 4; *diam. maj. fere* 4 *millim.*

The chief distinguishing features of this little species are its short stumpy growth and the narrow umbilicus. Of the known African species, *B. badiella*, received by the British Museum from Parreyss with the locality "Egypt," is the nearest ally of the present form. It is, however, of a somewhat different shape, has a smaller aperture, and is more narrowly perforate.

7. Bythinia walleri, n. sp.

Testa parva, albido-pellucida, nitida, perforata; anfractus $4\frac{1}{2}$–5, *perconvexi, striis incrementi tenuissimis sculpti; apertura rotunde*

ovata, longit. totius ½ haud æquans ; peristoma tenue, continuum, marginibus externi et basali levissime expansis. Longit. 5 *millim., diam.* 3 ; *apertnra* $2\frac{1}{4} \times 2$.

Fig. 3.

Bythinia walleri.

This is very different in form from *B. alberti*, having a much higher spire and smaller aperture. The single specimen is at present in the possession of the Rev. H. Waller.

8. Planorbis sudanicus.

Pl. sudanicus, v. Martens, Mal. Blät. 1870, vol. xvii. p. 35 ; 1874, p. 41 ; Pfeiffer, Novit. Conch. vol. iv. p. 23, pl. 114. f. 6–9 ; Smith, Proc. Zool. Soc. 1880, p. 349.

Hab. White Nile (*Consul Petherick* in Brit. Mus.); Gazelle River (Bahr-el-Ghasal) (*v. Martens*) ; Albert Nyanza (*Baker and Emin*) ; Tanganyika (*Smith*).

It is interesting to note the distribution of this species as dimly indicating a connection between the two lakes, which at present is but a matter of conjecture.

9. Planorbis stanleyi, n. sp.

Testa mediocriter depressa, utrinque subæqualiter concava, nitida, oblique striata, vix semipellucida, cornea, inferne pallida ; anfractus 4, *celeriter accrescentes, rotundati, ultimus magnus, antice paulo inflatus, sutura profunda sejunctus ; apertura magna, obliqua, plerumque supra anfr. penultimum elevata ; perist. tenue, marginibus callo tenui junctis, columellari leviter incrassato et reflexo. Diam.* 9, *alt.* $4\frac{1}{4}$; *apertura* $4\frac{1}{2}$ *longa,* $3\frac{1}{2}$ *millim. lata.*

This species is remarkable for the rapid enlargement of the last whorl, which ends in a very open aperture and usually is produced above the penultimate whorl ; in some specimens, however, it descends somewhat.

10. Corbicula radiata, Philippi.

Cyrena radiata (Parreyss, MS.), Philippi, Abbild. vol. ii. p. 78, pl. 1. f. 8.

Hab. White Nile (Bahr-el-Abiad) (*Philippi*) ; Albert Nyanza (*Baker and Emin*) ; Lake Nyassa (*Smith*, P. Z. S. 1877 p. 718).

11. Corbicula pusilla, Philippi.

Cyrena pusilla (Parreyss, MS.), Philippi, Abbild. vol. ii. p. 78, pl. 1. f. 7.

Hab. Upper part of the Nile (*Philippi*) ; Syene or Assouan on the Nile (*Parreyss in Brit. Mus.*).

12. Unio ægyptiacus, Cailland.

Hab. Various parts of the Nile; Albert Nyanza (*Baker*).

13. Unio caillaudi, Férussac.

Hab. Same as preceding.

14. Unio bakeri.

Unio bakeri, H. Adams, Proc. Zool. Soc. 1866, p. 376.

Hab. Albert Nyanza (*Baker and Emin*).

Only one fresh and two dead valves without the epidermis were obtained by Sir Samuel Baker. Five odd valves, which have been presented by Mr. Waller to the Museum and are in good condition, show that this species, like most others of the genus, is very variable in form, and that the extent and coarseness of the zigzag wrinkling of the surface is very inconstant. A number of so-called species of *Unio* described by Bourguignat[1] from the Victoria Nyanza approach very closely to *U. bakeri*, and indeed I should be surprised if *several* of them on comparison might not satisfactorily be classed with it.

15. Unio acuminatus.

Unio acuminatus, H. Adams, Proc. Zool. Soc. 1866, p. 376.

The two valves collected by Sir S. Baker are all that is known of this species. It is of a more slender form than the preceding, and has down the posterior dorsal area two subparallel shallow grooves or impressed rays with a raised space between them. This feature is represented in *U. bakeri* by two divergent colour-rays in the same part, but rather more remote from one another.

5. On the Lepidoptera received from Dr. Emin Pasha.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Received December 5, 1887.]

The Lepidoptera received from Dr. Emin Pasha are referable to no less than 156 species, of which thirteen Butterflies and two Moths are new to science; one or two of these are extremely variable and, had the extremes only been obtained, might fairly have been regarded as distinct species.

The collection contains a combination of South-western and North-eastern forms, by far the greater number, especially of those obtained at Wadelai in 1887, being identical with Abyssinian species; a few more southerly forms, identical with species from Kilma-njaro, crop up here and there, such as *Junonia infracta*, *Teracolus aurigineus*, and others.

[1] Moll. fluv. du Nyanza Oukéréwé (Victoria Nyanza), Paris, 1883, pp. 3–15.